WHAT IS CLAIMED IS:

1. A computer-implemented method for use in developing a course of treatment for an orthodontic patient, the method comprising:

scanning a patient's teeth or a physical model thereof to obtain data;

receiving in a computer the data obtained by the scanning;

obtaining in the computer a digital model of a patient's dentition, including a dental model representing the patient's teeth at a set of initial positions and a gingival model representing gum tissue surrounding the teeth; and

deriving in the computer from the digital model data representing an expected deformation of the gum tissue as the teeth would move from the initial positions to another set of positions.

2. The method of claim 1, wherein the computer derives the expected deformation of the gum tissue by:

separating from the gingival model a portion that represents gum tissue surrounding a particular tooth; and

subjecting the separated portion to at least one force that is applied to the particular tooth.

3. The method of claim 2, wherein the computer reconnects the separated portion to an adjacent portion of the gingival model after subjecting the separated portion to the transformation.

4. The method of claim 3, wherein, in subjecting the separated portion to at least one force, the computer creates a gap between the separated portion and the adjacent portion of the gingival model, and, in reconnecting the separated portion to the adjacent portion, the computer creates a stitching surface to fill the gap.

5. The method of claim 4, wherein the computer adjusts the shape of the stitching surface to alter the shape of the gum tissue in the reconnected gingival model.

6. The method of claim 5, wherein, in adjusting the shape of the stitching surface, the computer receives instructions from a human operator concerning the shape of the stitching surface.

7. The method of claim 4, wherein the stitching surface is bounded by two curves representing edges of the separated portion and the adjacent portion of the gingival model.

8. The method of claim 7, wherein, in creating the stitching surface, the computer selects points on the curves and connects the points to form triangles representing a surface mesh.

9. The method of claim 8, wherein the computer adjusts the shape of the surface mesh by moving a vertex shared by multiple ones of the triangles along a line.

10. The method of claim 9, wherein, in moving the vertex, the computer calculates a normal line for each of the triangles that share the vertex and calculates an average of the normal lines.

11. The method of claim 8, wherein the computer divides each of the triangles into smaller triangles to form a fine surface mesh.

12. The method of claim 11, wherein the computer divides the triangles such that each of the smaller triangles has at least one vertex shared by five more of the smaller triangles.

13. The method of claim 1, wherein, in deriving an expected deformation of the gum tissue, the computer selects a point in the gingival model and derives motion of the point as the teeth move from the initial set of positions to the other set of positions.

14. The method of claim 13, wherein, in deriving motion of the point, the computer attaches the point to a model of a corresponding tooth in the dental model and subjects the point to transformations applied to the corresponding tooth.

15. The method of claim 13, wherein the point lies on a gingival margin, at which the gum tissue meets one of the teeth.

16. The method of claim 13, wherein the computer creates another gingival model representing the gum tissue surrounding the teeth at the other set of positions.

17. The method of claim 16, wherein, in creating another gingival model, the computer selects points in the gingival model, derives positions for the points when the teeth are at the other set of positions, and creates a curve that connects the points at the derived positions.

18. The method of claim 17, wherein, in creating the curve, the computer selects the curve from a group of curves that have predetermined profiles.

19. The method of claim 18, wherein, in selecting the curve, the computer determines which type of tooth is nearest the points in the dentition model and selects a curve associated with the type of tooth that is nearest the points.

20. The method of claim 17, wherein, in creating the curve, the computer interpolates between two curves having predetermined shapes.

21. The method of claim 17, wherein the computer receives an instruction from a human operator to modify the shape of the curve.